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MINERAL INDUSTRY SURVEYS

U. S. DEPARTMENT OF THE INTERIOR
BUREAU OF MINES
WASHINGTON, D.C. 20241

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Sulfur, Annual Advance Summary

SULFUR IN 1987

Domestic production of sulfur in all forms decreased 5% from the quantity produced in 1986 to 10.5 million metric tons in 1987, according to the Bureau of Mines, U.S. Department of the Interior. The distribution of production was as follows: Frasch sulfur, 30%; recovered elemental sulfur, 59%; and contained sulfur in other forms, 11%. Shipments of sulfur in all forms to domestic and export markets decreased slightly compared with 1986 shipments. Frasch and recovered elemental sulfur accounted for 89% of total shipments of sulfur in all forms in 1987. Record high production from both natural gas plants and petroleum refineries was responsible for recovered sulfur shipments reaching an alltime high in 1987. However, the total value of shipments f.o.b. mine/plant decreased 16%. Eighty-nine percent of the shipments was for domestic consumption and 11% for export. Shipments of sulfur in all forms in 1987 were 4% greater than the quantity produced.

The average net shipment value for all elemental sulfur was down from $105.22 in 1986 to $89.78 per metric ton. Net shipment value f.o.b. mine/plant for Frasch sulfur decreased from $123.79 to $107.15 per metric ton and recovered elemental sulfur decreased from $92.06 to $79.63 per ton in 1987.

Domestic consumption of sulfur in all forms increased 7% from that of 1986. Eighty-six percent of the sulfur for domestic consumption was from domestic sources, compared with 87% in 1986. The percentage distribution of domestic sources of supply was as follows: Domestic Frasch sulfur, 28%; domestic recovered elemental sulfur, 48%; and combined domestic byproduct sulfuric acid, pyrites, hydrogen sulfide, and sulfur dioxide 10%. The remaining 14% of sulfur consumption was from imports of Frasch and recovered elemental sulfur.

Yearend producers' stocks of combined Frasch and recovered elemental sulfur after inventory adjustments were 16% below those at the close of 1986. The combined yearend stocks amounted to approximately a 2.8-month supply based on 1987 domestic and export demands for domestically produced Frasch and recovered elemental sulfur.

The total of Frasch and recovered elemental sulfur exported during 1987 decreased 34% in quantity and 45% in value. Imports of sulfur exceeded exports by 357,000 tons. The average reported export value of sulfur was $112.25 per ton in 1987, compared with $132.80 in 1986. Brazil and Mexico received 39% of these exports for fertilizer industry use. Belgium received 17%, mainly for transshipment to other European Economic Community countries. Exports of formed sulfur from the U.S. west coast increased by over 25% to about 577,000 tons, of which 170,000 tons was shipped to Mexico.

Prepared in the Branch of Industrial Minerals, April 6, 1988.

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Sulfur imports increased 19% compared with 1986 imports. Imports by rail from Canada increased 26%, while waterborne shipments from Mexico increased 9%. An estimated 540,000 tons of sulfur shipped to the west coast of Mexico from Canada and the United States was exchanged for Mexican sulfur delivered into Florida and the U.S. east coast.

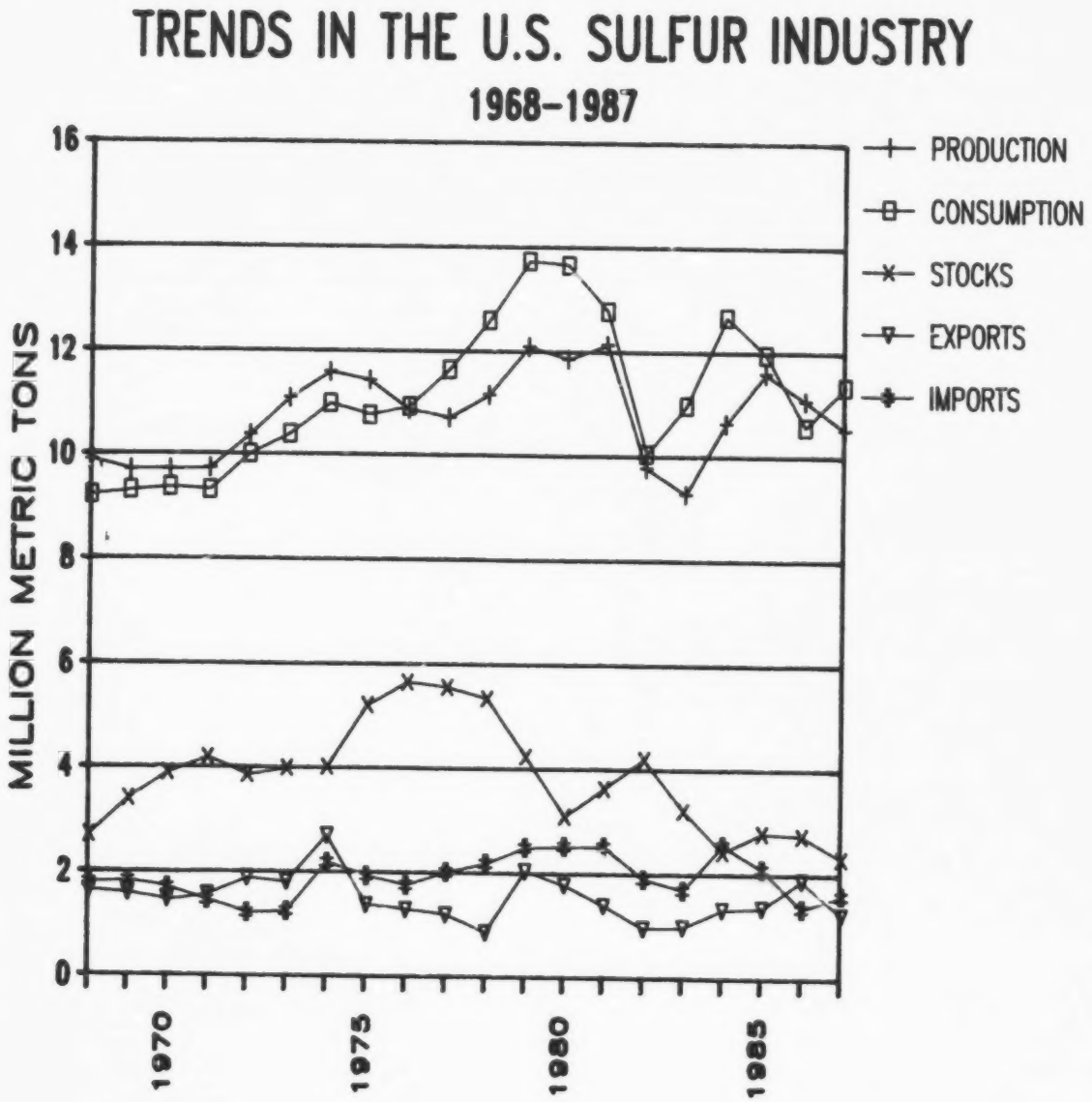

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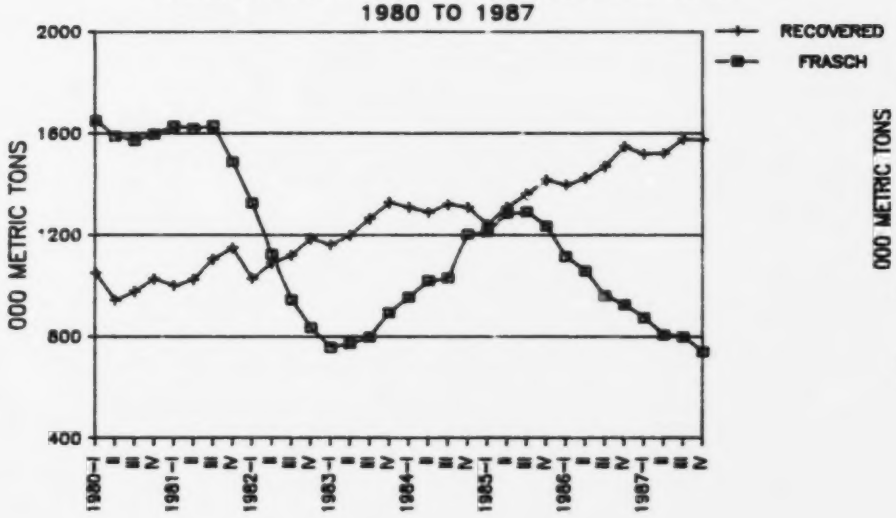
TABLE 1. - Salient sulfur statistics
(Thousand metric tons, sulfur content)

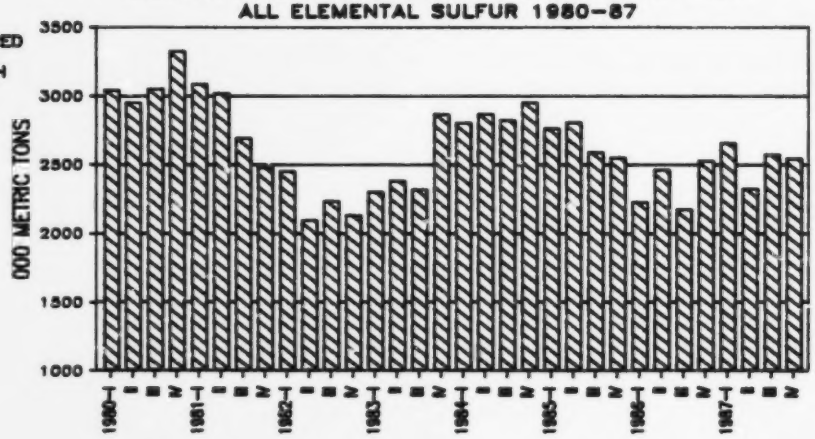
	1983	1984	1985	1986	1987
Production:					
Frash	3,202	4,193	5,011	4,043	3,202
Recovered elemental from natural gas	2,371	2,407	2,373	2,246	2,536
Recovered elemental from petroleum refineries1/	2,584	2,807	2,940	3,570	3,624
Byproduct sulfuric acid	831	962	957	919	1,003
Pyrites	W	W	W	W	W
Other forms 2/	302	283	328	309	173
Total	9,290	10,652	11,609	11,087	3/10,539
Shipments (sold or used):					
Frasch	4,111	5,001	4,678	4,108	3,610
Recovered elemental	5,041	5,210	5,266	5,798	6,180
Byproduct sulfuric acid	831	962	957	919	1,003
Pyrites	W	W	W	W	W
Other forms 2/	302	283	328	309	173
Total	10,285	11,456	11,229	11,134	10,966
Imports:					
Frasch (Mexico)	604	722	724	726	793
Recovered elemental (Canada)	1,091	1,812	1,354	605	764
Recovered elemental (other)	(4/)	23	26	16	42
Total	1,695	2,557	2,104	1,347	1,599
Exports:					
Frasch and recovered	992	1,334	1,365	1,895	1,242
Consumption:					
Frasch: Domestic	3,510	4,090	3,692	2,858	3,145
Imports	604	722	724	726	793
Recovered elemental:					
Domestic	4,650	4,787	4,887	5,153	5,403
Imports	1,091	1,835	1,380	621	806
Byproduct sulfuric acid	831	962	957	919	1,003
Pyrites: Domestic	W	W	W	W	W
Other forms 2/	302	283	328	309	173
Total 5/	10,988	12,679	11,968	10,586	11,323
Yearend producers' stocks 6/:					
Frasch	3,070	2,264	2,598	2,532	2,122
Recovered	153	155	201	216	194
Total	3,223	2,419	2,799	2,748	2,316

W Withheld to avoid disclosing company proprietary data; included in "Other forms."
1/ Includes small quantity from coking operations.
2/ Hydrogen sulfide and liquid sulfur dioxide and data indicated by the symbol W.
3/ Data do not add to total shown because of independent rounding.
4/ Less than ½ unit.
5/ Measured as shipments, plus imports, minus exports.
6/ Reported producers' stocks after inventory adjustments.

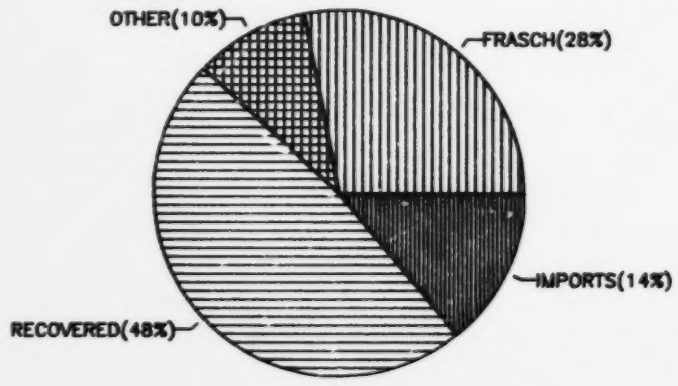
QUARTERLY SULFUR PRODUCTION
1980 TO 1987



QUARTERLY APPARENT CONSUMPTION
ALL ELEMENTAL SULFUR 1980–87



U.S. SULFUR CONSUMPTION
BY TYPE – 1987



11.32 MILLION TONS

QUARTERLY SULFUR SHIPMENTS
1980 TO 1987

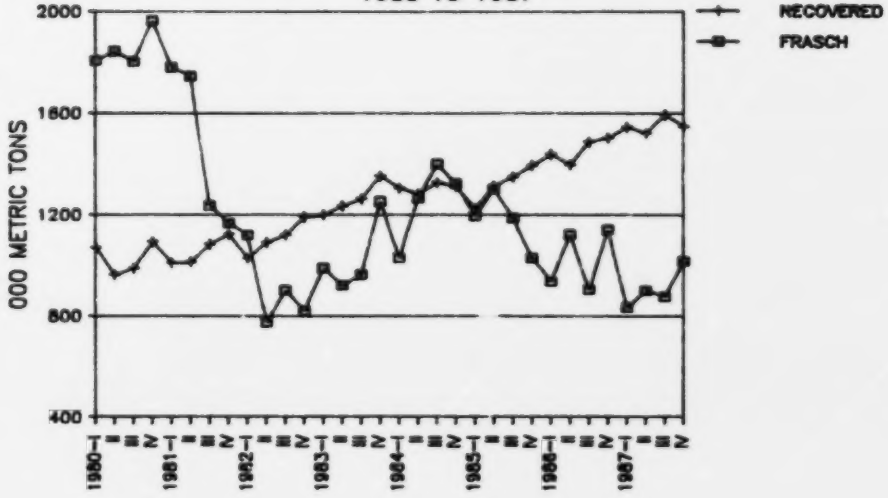


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Table 2.--Recovered sulfur produced and shipped in the United States, by State
(Thousand metric tons and thousand dollars)

State	1986			1987		
	Production (Quantity)	Shipments		Production (Quantity)	Shipments	
		Quantity	Value		Quantity	Value
Alabama	338	341	36,452	319	319	30,629
California	634	630	50,964	656	670	39,764
Florida	80	80	W	72	72	W
Illinois	372	368	36,581	255	256	26,034
Louisiana	524	527	57,418	538	536	51,074
Michigan and Minnesota	158	158	13,938	152	152	12,648
Mississippi	702	707	79,287	778	780	70,379
New Mexico	46	46	3,621	46	46	2,870
North Dakota	105	104	7,043	126	127	8,000
Ohio	46	46	5,188	42	43	3,915
Pennsylvania	52	53	4,540	59	58	4,417
Texas	1,517	1,516	141,223	1,516	1,532	134,232
Wisconsin	2	2	117	W	W	W
Wyoming	684	676	33,517	1,010	1,015	46,629
Other1/	558	545	63,863	591	576	61,548
Total2/	5,816	5,798	533,752	6,161	6,180	492,136

W Withheld to avoid disclosing company proprietary data; included with "Other."
1/Includes Arkansas, Colorado, Delaware, Indiana, Kansas, Kentucky, Montana, New Jersey, Utah, Virginia, Washington, Puerto Rico, the Virgin Islands, and data indicated by symbol W.
2/Data may not add to totals shown because of independent rounding.

Table 3.--Recovered sulfur produced and shipped in the United States, by Petroleum Administration for Defense (PAD) district

(Thousand metric tons)

District and Source	1986		1987	
	Production	Shipments	Production	Shipments
PAD 1:				
Petroleum and coke	254	258	253	246
Natural gas	79	79	72	72
Total1/	334	338	325	319
PAD 2:				
Petroleum and coke	715	712	602	603
Natural gas	107	106	128	128
Total	822	818	730	731
PAD 3:2/				
Petroleum	1,830	1,818	1,961	1,966
Natural gas	1,385	1,390	1,336	1,339
Total1/	3,215	3,208	3,298	3,306
PAD 4 and 5:				
Petroleum	769	766	806	818
Natural gas	673	666	999	1,004
Total1/	1,443	1,432	1,806	1,823
Grand total1/	5,816	5,798	6,161	6,180

1/Data may not add to totals shown because of independent rounding.
2/Includes Puerto Rico and the Virgin Islands.

Table 4.--Sulfur produced and shipped from Frasch mines in the United States
(Thousand metric tons and thousand dollars)

Year	Production			Shipments	
	Texas	Louisiana	Total1/	Quantity	Value2/
1983	1,915	1,286	3,202	4,111	414,210
1984	2,257	1,937	4,193	5,001	546,106
1985	2,940	2,071	5,011	4,678	573,570
1986	2,463	1,579	4,043	4,108	508,512
1987	1,833	1,369	3,202	3,610	386,834

1/Data may not add to totals shown because of independent rounding.
2/F.o.b. mine.

Table 5.--Consumption of sulfur1/ in the United States
(Thousand metric tons)

	1983	1984	1985	1986	1987
Frasch:					
Shipments	4,111	5,001	4,678	4,108	3,610
Imports	604	722	724	726	793
Exports	601	911	986	1,250	465
Total	4,114	4,812	4,416	3,584	3,938
Recovered:					
Shipments2/	5,041	5,210	5,266	5,798	6,180
Imports	1,091	1,835	1,380	621	806
Exports	391	423	379	645	777
Total	5,741	6,622	6,267	5,774	6,209
Pyrites, shipments	W	W	W	W	W
Byproduct sulfuric acid, shipments	831	962	957	919	1,003
Other forms, shipments3/	302	283	328	309	173
Total, all forms	10,988	12,679	11,968	10,586	11,323

W Withheld to avoid disclosing company proprietary data; included with "Other forms, shipments."
1/Crude sulfur or sulfur content.
2/Includes Puerto Rico and the Virgin Islands.
3/Includes consumption of hydrogen sulfide, liquid sulfur dioxide, and data indicated by symbol W.

U.S. Department of the Interior
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Table 6.--U.S. exports1/ of elemental sulfur, by country
(Thousand metric tons and thousand dollars)

Country	1986		1987	
	Quantity	Value	Quantity	Value
Algeria	22	2,990	--	--
Argentina	11	1,605	13	1,850
Australia	1	720	12	1,862
Belgium-Luxembourg	249	30,907	217	26,801
Brazil	188	28,880	258	31,532
Canada	19	1,116	15	1,386
Colombia	14	1,869	21	2,255
Egypt	40	4,585	--	--
France	11	1,335	25	2,574
India	66	8,663	85	8,409
Indonesia	53	6,839	24	2,332
Israel	25	3,533	(2/)	5
Korea, Republic of	1	553	14	2,498
Mexico	139	13,768	222	20,798
Morocco	564	77,920	108	10,449
Netherlands	7	820	3	173
Romania	--	--	21	2,110
Senegal	56	7,101	48	5,127
South Africa, Republic of	19	2,308	26	2,575
Taiwan	49	6,590	23	2,402
Tunisia	322	42,215	64	6,948
Turkey	19	2,439	18	2,064
Uruguay	8	1,133	(2/)	71
Other	r/13	r/3,775	24	5,207
Total3/	1,895	251,664	1,242	139,431

r/Revised.
1/Includes exports from the Virgin Islands.
2/Less than 1/2 unit.
3/Data may not add to totals shown because of independent rounding.

Source: Bureau of the Census.

Table 7.--U.S. imports of elemental sulfur, by country
(Thousand metric tons and thousand dollars)

Country	1986		1987	
	Quantity	Value1/	Quantity	Value1/
Canada	605	50,342	764	52,048
Mexico	726	89,709	793	94,444
Venezuela	16	1,891	41	4,897
Other2/	(3/)	278	1	708
Total	1,347	142,220	1,599	4/152,096

1/Declared customs valuation.
2/Includes the Dominican Republic, France, the Federal Republic of Germany, and Japan in 1986 and Belgium, Chile, the Federal Republic of Germany, Japan, and Switzerland in 1987.
3/Less than 1/2 unit.
4/Data do not add to total shown because of independent rounding.

Source: U.S. Bureau of the Census.

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